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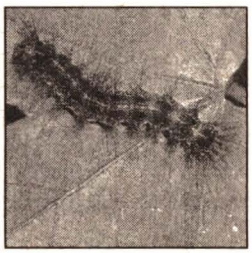

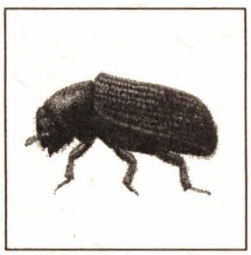

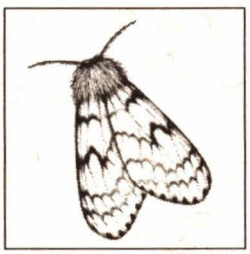

Exotic Invasive Species:
A Strategic Plan

Northeastern Area, State and Private Forestry
North Central Research Station
Northeastern Research Station

USDA Forest Service
Northeastern Area, State and Private Forestry
North Central Research Station
Northeastern Research Station

January 26, 2000

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Exotic Invasive Species: *A Strategic Plan*

Introduction

Exotic invasive pests of trees are affecting our urban and rural forests, causing a decrease in ecosystem integrity, biological diversity, economic value, and human health and safety within the United States. Significant forest composition changes have occurred in the East due to the impacts of such pests as chestnut blight, gypsy moth, beech bark disease, Dutch elm disease, and other exotics. The Asian longhorned beetle is the latest exotic invasive tree pest that has been detected. This is a very serious pest that has necessitated the removal of nearly 5,600 trees by December of 1999 at seven locations in and around Chicago and New York City. Removal and destruction of infested trees is the only known way to cope with this insect at this time. Tree removal is costly and emotionally distressful to property owners. Restoration of the urban forest is also very costly, as are survey and monitoring activities.

While invasive insects and diseases have been the primary problem, exotic plants are also recognized as an ecologically threatening issue in the United States. The impacts of invasive plants and their management problems are significant. Since funding for activities in this area is uncertain, we will address exotic plant concerns by utilizing existing programs to whatever degree possible.

This strategic plan briefly lists responsibilities, current programs and activities, and some of the contact people involved in exotic invasive species management. It then states the purpose of our planning, our vision, and lists the goals we believe need to be achieved to better address exotic invasive species. Finally, objectives and related tasks are provided to help us move toward achieving those goals. We view this as a dynamic document that will be periodically examined and updated to help us focus our efforts appropriately and efficiently.

Federal Responsibilities

Several authorities exist that support our research and management activities in detecting, evaluating, eradicating, or suppressing exotic pests. In addition, on February 3, 1999, President Clinton signed an Executive Order addressing Invasive Species. The Forest Service Natural Resource Agenda focuses on four key areas, one being "Sustainable forest ecosystem management," of which exotic species management is a component. Clearly this mandates the management of invasive species in order to maintain healthy, diverse, and productive watersheds and ecosystems.

Within the USDA, the Animal and Plant Health Inspection Service (APHIS) is responsible for preventing introductions and for eradicating new introductions of exotic pests. The Forest Service (FS) responsibility is recognized in two deputy areas. Through State and Private Forestry, the Forest Health Protection (FHP) staff assists in the evaluation and eradication of exotic forest insect and disease pests, as well as the management of new pests should they become permanently established. While the FS does not have any regulatory responsibility or legal authority for responding to new introductions of exotic plant pests, the agency does have a direct interest in seeing that potential exotic tree pests do not become established. As a result, the FS, through the FHP staff, assists APHIS and the states in the evaluation and eradication of these pests. Through the Research and Development deputy area, the FS role is to investigate the biology and ecology of pests to enhance detection and control and to develop new methods, technologies, and agents to manage these pests.

Current Programs

The Northeastern Area, State and Private Forestry, has a large staff of specialists serving the 20 northeastern states. A major portion of the Forest Health Management program of work involves the prevention, detection, evaluation, suppression, monitoring, and management of exotic insect and disease pests of trees. Considerable resources are expended in the restoration of the impacted urban forest as well. Examples include the gypsy moth, hemlock woolly adelgid, Dutch elm disease, European pine shoot beetle, white pine blister rust, and beech bark disease (see Appendix A). The staff has also responded to newly detected exotic tree pests such as the Asian longhorned beetle by providing assistance to the lead agencies.

The Forest Health Technology Enterprise Team, located in Morgantown, WV, has a small staff of specialists that administer grants with universities and other research organizations focused on improving management technologies. This team participates in and encourages the development and use of methods and technologies for improved detection, monitoring, control, and management of exotic pests.

The North Central Research Station (NC) and the Northeastern Research Station (NE), have a total of ten research work units (RWUs) with extensive experience in conducting research on exotic invasive pests. These work units have staffs which include entomologists, pathologists, biologists, microbiologists, ecologists, chemists, foresters, public information specialists, and technicians. Of the ten work units, six focus on exotic invasive species or closely related research within the 20 northeastern states that the two Stations serve (Appendix A). In addition, these RWUs have a national scope which enables them to address exotic invasive species issues anywhere within the United States. The work units are located in East Lansing, Michigan; St. Paul, Minnesota; Rhinelander, Wisconsin; Hamden, Connecticut; Morgantown, West Virginia; and Delaware, Ohio.

Research at these locations includes studies at the molecular, organismal, population, and landscape levels. Through these investigations, management strategies are being developed that include chemically and biologically based controls. Recent research and development addresses pesticide enhancement, data base and expert system development for the gypsy moth, work on a genetically engineered virus for American chestnut, and life cycle and management approaches for the Asian longhorned beetle and the common pine shoot beetle.

Exotic tree pests investigated include Dutch elm disease, chestnut blight, beech-bark disease, butternut canker, white pine blister rust, gypsy moth, hemlock woolly adelgid, Asian gypsy moth, and more recently, the pine shoot beetle and the Asian longhorned beetle, as well as research on pesticides and biological control (see Appendix A).

NA, NC, and NE have been working together very closely for the last 10 years on these emerging problems. This cadre of entomologists, pathologists, ecologists, foresters, and other scientists creates a well staffed "organization" capable of addressing most exotic pest situations. However, to meet the growing challenge, we must continually assess our capacity to address these pest introductions and to manage them more effectively while continuing to complete our other mandated responsibilities. The goal is to have healthy, resilient, and productive urban and rural forests.

Our Purpose

Our purpose is to develop an effective strategy for NA, NC, and NE to address the problems resulting from exotic invasive insects, diseases, and plants impacting our forests. This strategy addresses our roles and our relationships with other Forest Service units in the eastern United States, other federal agencies, state cooperators, universities and other interested organizations or agencies. The strategy addresses the needed actions on both public and private lands, and on both urban and rural lands.

Our Vision

The United States is a country where the establishment of new exotic invasive forest pests is rare. Where an infestation does occur, Forest Service units work together effectively with Federal and state plant regulatory agencies to deal with the infestation. Through vigorous research and the development of effective technologies, exotic invasive pests already established are effectively managed to reduce their spread and to minimize the damage to our urban and rural forests. Such efforts are known and strongly supported by state and federal legislators, leading to the funding of sustained control operations, implementing sound restoration programs, and the development of both short-term and long-term research programs. The implementation of a broad, coordinated communications strategy has increased the awareness of the issue throughout the northeast and midwest, and partnerships are being formed with traditional and non-traditional partners to further respond to the threat.

Our Goals

1. ***Respond quickly*** by assisting in the detection, evaluation, eradication, and monitoring of new exotic forest pest introductions while ***managing established exotic pests*** efficiently, effectively, and in environmentally acceptable ways.

2. Increase ***research*** and development on the ***biology*** of exotic forest pests, and develop and improve ***control*** methods for these pests in cooperation with universities and other cooperators.

3. Create ***increased awareness*** of invasive pests through information and education and technology transfer to stimulate early detection by a ***better-informed public***.

4. ***Clarify*** Forest Service ***roles and responsibilities***, in partnership with other agencies and cooperators, in the management of exotic pests.

5. ***Integrate awareness*** of exotic invasives into all FS programs, but in particular the Urban Forestry and Stewardship programs.

6. Establish a policy to ***address restoration*** of the damages associated with the eradication activities of exotic invasive species.

7. Determine our ***role, responsibilities, and capacity*** to respond in the detection, monitoring, and management of invasive weed species that adversely affect forest ecosystems.

8. Continue to ***support*** activities that contribute to ***preventing*** new introductions.

Objectives to Achieve Our Goals

GOAL **Respond quickly by assisting in the detection, evaluation, eradication, and monitoring of new exotic forest pest introductions while managing established exotic pests efficiently, effectively, and in environmentally acceptable ways.**

Objective: *Increase inter- and intra-agency effectiveness in prevention, detection, suppression, monitoring, and restoration.*

Objective: *Continually review our process on how we react to new infestations or problems.*

Objective: *Where appropriate, expand the cooperative effort in exotic invasive species to other FS units and other agencies.*

GOAL **Increase research and development on the biology of exotic forest pests and develop and improve control methods for these pests in cooperation with universities and other cooperators.**

Objective: *Increase our scientific understanding of exotic forest pests.*

GOAL **Create increased awareness of invasive pests through information and education and technology transfer.**

Objective: *Increase the awareness of exotic invasive species with our federal and state cooperators and their partners.*

Objective: *Increase public awareness of exotic invasive species through targeted and focused outreach activities.*

GOAL **Clarify Forest Service roles and responsibilities, in partnership with other agencies and cooperators, in the management of exotic pests.**

Objective: *Improve coordination between NA, NC, NE, and APHIS.*

Objective: *Establish roles for specific individuals for the daily operation related to invasive species.*

Objective: *Clarify the Forest Service support role in the northeast and midwest.*

Objective: *Support international activities and recognize their importance in combating exotic invasive pests through agency-level and other programs.*

GOAL **Integrate consideration of exotic invasives into all FS programs, but in particular the Urban Forestry and Stewardship programs.**

Objective: *Develop program criteria to integrate exotic species management into Urban and Community Forestry and Stewardship programs.*

GOAL **Establish a policy to address restoration of the damages associated with the eradication activities of exotic invasive species.**

Objective: *Formulate an approach for dealing with the destructive impacts associated with eradication of some exotic pests and provide funding to support such activities.*

GOAL **Determine our role, responsibilities, and capacity to respond in the detection, monitoring, and management of invasive weed species that adversely effect forest ecosystems.**

Objective: *Evaluate our current organizational capacity with respect to staffing, technological expertise, and budgetary constraints.*

Objective: *Assess the significance of invasive forest weeds on the eastern forest ecosystems.*

Objective: *Determine our approach to participating in the management of invasive forest weeds of the eastern forest ecosystems*

GOAL **Support activities that contribute to preventing new introductions.**

Objective: *Continue to participate in the conduct of pest risk assessments in cooperation with APHIS.*

Objective: *Continue to provide international technical assistance where appropriate.*

Objective: *Continue to participate in development and evaluation of the Exotic Forest Pest Information System for North America (EFPISNA).*

Current Programs

Northeast Research Station – "Exotics" RWUs

***Disturbance Ecology and Management of Oak-Dominated Forests (NE-4557)**

- Kurt Gottschalk, Project Leader, Morgantown, WV; mostly GM research.

***Development of Biologically Based Controls for Forest Insect Pests and Diseases Through Molecular Technologies (NE-4509)**

- Jim Slavicek, Project Leader, Delaware, OH; biotechnology on GM, GM virus, DED, and ALB.

***Forest Insect Biology and Biocontrol (NE-4501)**

- Kathleen Shields, Project Leader, Hamden, CT; GM, HWA, ALB, Nun moth, and others.

***Forest Insect Pathology and Microbial Control (NE-4502)**

- Mike McManus, Project Leader, Hamden, CT; mostly GM and other defoliators.

Forest Disease Biology and Ecology (NE-4505)

- Phil Wargo, Project Leader, Hamden, CT; this unit has no current research on exotics, but has studied exotics in the past and could study exotic diseases and/or plants in the future. Also, some of their research on disturbances could be relevant to exotic invasions.

Effects of Urbanization on Forest Ecosystems In and Near Cities (NE-4952)

- Dave Nowak, Project Leader, Syracuse, NY; this unit includes exotic plant species in some of their work, although the focus is not on the exotic. The work this unit is doing as part of the Baltimore LTER project includes research on exotic plants.

** Denotes the core units where most of the research on exotics is currently being done.*

North Central Research Station – "Exotics" RWUs

Stress Effects on Tree-Insect-Natural Enemy Interactions (NC-4501)

- Robert A. Haack, Project Leader, East Lansing, MI; research on exotic insects, such as pine shoot beetle and ALB:
  - Host preferences
  - Basic biology
  - Pheromone studies

  Studies on worldwide distribution patterns of exotic forest pests.
  Analysis of port interception records.

Rapid Systems for Resistance and Control of Diseases in Nurseries, Forests, Plantations, and Christmas Tree Plantations (NC-4502)

- Jennifer Juzwik, Project Leader, St. Paul, MN
  - Molecular genetics of white pine blister rust
  - Resistance to butternut canker

Genetic and Molecular Bases of Forest Tree Stress Tolerances (NC-4155)

- Charles A. Michler, Project Leader, Rhinelander, WI
  White pine blister rust resistance
  - Genetic engineering
  - Screening
  - Management guidelines

Managing Forest Environments for Urban Populations (NC-4902)

- John F. Dwyer, Project Leader, Chicago, IL
  Public involvement and reaction to exotic infestations.

Northeastern Area Forest Health & Management (FH&M)

The following list summarizes Forest Health and Management's activities directed at exotic invasive pests. Currently, an estimated 75 percent of our staff time is spent on the detection, evaluation, suppression, or management of exotic invasive pest problems.

Asian longhorned beetle

- FHP specialists are assisting NY and Chicago, IL with surveys, providing technical assistance as appropriate, and helping coordinate restoration and recovery efforts with the affected communities and the state forester's office.

- Facilitating formation of ALB/exotic pest advisory groups in the 20 state area, consisting of State and federal regulatory agencies, the state forester's office, cooperative extension, and others, to plan a response to ALB finds in the state.

- An ALB working group consisting of Radnor and Field Office staffs are improving communication and coordinating action on this pest in the northeast and midwest with USDA APHIS Plant Protection and Quarantine.

- Coordinating development of ALB information products and public outreach efforts with USDA APHIS.

- An ALB website for NA is established and maintained by the St. Paul Field Office.

- We have developed an interagency agreement with APHIS to pay salaries for FS tree climbers who are working in Chicago.

- Coordinating the scheduling of FS tree climbers to assist in survey work in Chicago and New York.

Hemlock woolly adelgid

- Lead the Hemlock Woolly Adelgid (HWA) working group whose membership includes FH&M, FHTET (Morgantown), Region 8 (FHP), and NE.
- Evaluating promising biological control options for controlling HWA.
- Supporting the development of mass rearing technology for *P. tsugae,* a small ladybird beetle predator of HWA.
- Coordinating regional distribution of HWA predators and developing monitoring protocols for evaluating the effectiveness of predator releases.

Gypsy moth

- Implementing and funding the gypsy moth Slow The Spread program in cooperation with the Washington office, Region 8, and affected state cooperators.
- Facilitate formation of gypsy moth advisory groups to discuss future management options in uninfested states.
- We work with affected state cooperators through the cooperative suppression program to provide funding and technical assistance for suppression of the gypsy moth.
- We have been heavily involved in the development and distribution of software and hardware in support of Gypses, a decision support system for management of gypsy moth.
- We maintain the National Pest Suppression Tracking System for the WO-FHP that provides a daily status of the suppression, eradication, and slow-the-spread activities across the country during late spring and early summer.
- We provide technical assistance and administer grants for the detection, monitoring, evaluation, suppression and eradication of gypsy moth infestations on all public and private land.
- We participate in, and provide technical assistance for, the preparation of the Environmental Assessments conducted for each gypsy moth suppression/eradication project.

White pine blister rust

- The St. Paul Field Office, in cooperation with the North Central Research Station, is conducting a demonstration project to evaluate the resistance of the Oconto River Seed Orchard white pine in plantings on the Superior and Chippewa National Forests.
- Forest Health Protection has been involved in the development of publications such as "How to Manage Eastern White Pine to Minimize Damage from Blister Rust and White Pine Weevil."

Dutch elm disease

- Cooperating with the District of Columbia and the National Park Service's National Capital Region to revitalize a program in the city for managing the incidence of Dutch elm disease and maintaining healthy city trees.

- Continue to transfer new technology and update information on the diagnosis and treatment of DED and maintenance of healthy elm trees.

- Recently updated and published "How to Identify and Manage Dutch Elm Disease."

Exotic pests – general

- Established a NA "weed team" to advise AD-FH&M on emerging exotic plant issues.

- Implementing the Exotic Forest Pest Information System for North America in cooperation with Canada, Mexico, and APHIS. The list, accessible via the internet, provides background and risk information on exotic pests.

- NA provides timely information on current and new exotic tree pests through the "Pest Alert" series.

- An Exotic Forest Pest Workshop for Midwest States has been hosted by the St. Paul Field Office in 1997 and 1998. Federal and state forest health and plant regulatory personnel meet to discuss established exotics in their states and to share information and learn about new potential exotics. This meeting could be evaluated for expansion to include other states, or perhaps other Field Offices could host similar meetings.

- Forest Health Protection staffs have cooperated with APHIS in Pest Risk Assessments in Chile, New Zealand, Russia, Mexico, and are currently completing one for South America.

- Continue to provide technical assistance internationally, as is being done in Brazil with the *Sirex* project, in Mexico for oak decline, in Russia for the Asian gypsy moth, and in Kenya for a variety of pest management concerns.

Forest Health Protection – Forest Health Technology Enterprise Team

- Participating on the Hemlock Woolly Adelgid (HWA) Working Group with NA-FH&M, Region 8 (FHP), and NE.
- Evaluating promising biological control options for the HWA.
- Supporting the development of mass rearing technology for *P. tsugae*, a small ladybird beetle predator of HWA, and other potential biological control agents of this pest.
- Helping develop monitoring protocols for evaluating effectiveness of predator releases against HWA.
- Improving formulations and application technology for the gypsy moth virus insecticide Gypchek.
- Improving tank mixes and application methodology for Disparlure for gypsy moth mating disruption.
- Evaluating pheromones and karimones for use in detection and survey programs for the Asian longhorned beetle.
- Evaluating biological and chemical insecticides for control of the Asian longhorned beetle.
- Developing an effective biological control program for mile-a-minute weed.
- Evaluating the potential for natural enemies to control beech scale.

Objectives and Tasks to Achieve Our Goals

GOAL **Respond quickly by assisting in the detection, evaluation, eradication, and monitoring of new exotic forest pest introductions while managing established exotic pests efficiently, effectively, and in environmentally acceptable ways.**

Objective: *Continually review our process on how we react to new infestations or problems.*

A. The Eastern Forest Invasives Species Team (EFIST) should determine if FS response can/should be initiated through existing delivery mechanisms considering staff structure and current operating budgets.

B. If response is deemed necessary but is above and beyond current resources, then EFIST should identify a team and allocate the resources necessary to do the job.

C. Facilitate cooperative relationships to respond to introductions of exotic invasive pests so that quick, decisive action can be taken to minimize impacts and reduce costs.

D. Assist APHIS with the formation of State Councils and the writing of invasive forest pest response plans for each of the 20 states in the Northeastern Area.

E. Develop a protocol for rapid response of field staff and research scientists to new infestations of invasive species as they are discovered. The protocol will focus on a "strike team" model to rapidly engage appropriate staff and resources using the Incident Command System. The actual team composition will depend on issues, location, and scope of potential impact.

F. Conduct meetings with APHIS to discuss coordination. A focus item will be learning each organization's chain-of-command, getting to know agency responsibilities, individuals, and developing working relationships.

Objective: *Where appropriate, expand the cooperative effort in exotic invasive species to other FS units and other agencies.*

A. EFIST will look to include the Forest Health Technology Enterprise Team, Region 9, Region 8, the Southern Research Station, and the APHIS Eastern Region into the EFIST team.

B. EFIST will also evaluate adding other agencies to the team including US Fish and Wildlife Service, National Park Service, and the Department of Defense through the Army Environmental Center.

C. Other organizations, such as the state foresters and non-governmental organizations like the Nature Conservancy, will be kept informed and involved as opportunities arise.

D. Integrate Forest Health Monitoring activities and data collection into the operational aspects of Forest Health and Management as it relates to exotic invasive management. Invasive weed information collected during their surveys should be analyzed and incorporated into overall FHP program activities.

E. Develop a protocol for keeping the State Departments of Natural Resources informed and involved in the management of exotic invasive pests.

Objective: *Increase intra- and inter-agency effectiveness in prevention, detection, suppression, monitoring, and restoration.*

A. Focus on process design, technology transfer, and training.

B. Develop tree identification materials and offer training for detailers brought in for special detection projects such as Asian longhorned beetle surveys. Urban foresters and horticulturists will be included in presenting the training for APHIS, Forest Service, stewardship plan writers, and other State cooperators.

C. Develop integrated intervention strategies for new invasive pests and management strategies for those that have become established.

D. Evaluate and implement established Integrated Pest Management programs to manage established invasive species populations.

F. Review Field Office organization to evaluate staffing, resources, and current programs to assess long term needs.

G. Continue to support the development and refinement of the Exotic Forest Pest Information System for North America.

H. Continue to support and cooperate in the development of pest risk assessments and ecological impact assessments associated with our international cooperators.

I. Evaluate expanding the Exotic Forest Pest Workshop for Midwest States presently hosted by the St. Paul Field Office to an Area wide meeting that will include current research results, along with practical control methods and areas of cooperation needed to be effective.

GOAL **Increase research and development on the biology of exotic forest pests and develop and improve control methods for these pests in cooperation with universities and other cooperators.**

Objective: *Increase our scientific understanding of exotic forest pests.*

A. Dialogue with scientists from the country of pest origin to seek information on the species.

B. Initiate preliminary research to address voids in current knowledge, like life history, dispersal, host preferences, and natural biological controls.

C. Initiate ecological/environmental impact studies and analyses.

D. Commit to the long-term efforts needed to develop new methods and technologies to respond to these invasive pests.

E. Utilize the Forest Health Technology Enterprise Team, Morgantown, WV, to provide liaison between research and other interests and to develop and improve methods and technologies for dealing with these invasive pests.

F. Evaluate research programs on a yearly basis and make proactive adjustments as necessary.

G. Continue to develop and expand the Exotic Forest Pest Information System for North America.

H. Closely cooperate with other federal and state agencies and with universities working on exotic forest pests.

GOAL **Create increased awareness of invasive pests through information and education and technology transfer.**

Objective: *Increase the awareness of exotic invasive species with our federal and state cooperators and their partners.*

A. Identify key agency and interagency staff and distribute the information within all units.

B. Develop and distribute informative literature on pests.

C. Develop a list of the top ten exotic pest species of concern for each state in the region.

D. Working with specialists from Information, Management and Analysis and Conservation Education, maintain regular contact with responsible staffs.

E. Develop coordinated, comprehensive mailing lists for both hard copy and electronic mail.

F. Develop and distribute either quarterly or bi-monthly updates that address operations, scientific developments, and policy movement.

G. Address NEPA and related requirements such as EIS's, ecological risk assessments, site-specific environmental assessments, etc.

Objective: *Increase public awareness of exotic invasive species through targeted and focused outreach activities.*

A. Identify local, regional, and national spokespersons.

B. Identify priority stakeholders that need to be reached and kept informed.

C. Begin the development of media materials, both electronic and hard copy.

D. Develop a public outreach strategy involving both our partners and stakeholders.

E. Expand the St. Paul Field Office website in order to more fully cover exotic pests.

F. Develop information products for the public that emphasize the possible ecological/environmental impacts and address mitigation.

G. Work towards the formation of public watch groups that can assist in monitoring, detection, and reporting of exotic pests.

H. Establish a quarterly newsletter and/or Electronic News Updates that addresses all aspects of exotic invasive species control and management.

I. Ascertain that reports provide useful information for our publics, the media, WO, and Congress on the significance of the pest generated impacts.

J. Make every effort to identify and communicate with interested publics, the tree care industry, interested environmental groups, the environmental media, and Congressional staffs to keep them abreast of new developments with invasive pests.

K. Build upon the St. Paul Field Office web site to serve as the official web site for information related to exotic invasive species.

L. The Asian longhorned beetle website being developed by the University of Vermont will be completed and transferred to the St. Paul Field Office website.

M. Develop a closer working relationship with the Society of Environmental Journalism to keep them informed of developing concerns and enlist their assistance getting it publicized.

GOAL **Clarify Forest Service roles and responsibilities, in partnership with other agencies and cooperators, in the management of exotic pests.**

Objective: *Improve coordination between NA, NC, NE, and APHIS.*

A. EFIST is made up initially by members from NA, NC, and NE. APHIS will be added by October 1, 2000. The team will be a leadership coalition to focus the combined expertise of these organizations on the invasive species issue with an organized framework for action. A major role of this team will be to recommend the resources needed to become an effective force in exotic invasive species research and management.

The Executive Team presently consists of:

Dr. Gerard Hertel, Assistant Director, Forest Health and Management, NA
Dr. Robert Bridges, Assistant Director, NE
Dr. Nancy Lorimer, Assistant Director, NC

Future members will include APHIS and perhaps other federal agencies and non-governmental environmental organizations such as The Nature Conservancy. Efforts will be made to draw our state cooperators into the process as well.

B. EFIST will:

- Prepare and help deliver information to Congressional contacts
- Monitor and review progress of projects
- Evaluate results from research projects and implementation programs
- Redirect the program in coordination with the Area and Station Directors
- Facilitate the sharing of information and coordinate activities between the FS and APHIS
- Identify priorities of work
- Make work assignments
- Identify information needs

C. The EFIST will draw upon the existing specialists within the Area and Research Stations to carry out the individual projects. The appropriate Assistant Directors of each organization will oversee the assignments and completion of work within their areas of responsibility and expertise.

D. Coordinate with APHIS in information sharing and in the development and support of the individual State Councils to be formed to guide their response to exotic invasive introductions.

E. FS Research and Development will coordinate with other cooperators such as the Agricultural Research Service to be sure they are kept informed of programs and activities that would benefit from their participation.

Objective: *Establish roles for specific individuals for the daily operation related to invasive species as follows:*

A. Northeastern Area:

Pete Rush: point of contact for:

- Advise the EFIST Executive Team and oversee implementation of the Invasive Species Strategy.
- Promote integration of strategy with other program areas, specifically the urban forestry, Stewardship, Conservation Education, watershed management, and the Fire Programs.
- Oversee development of agreements between FS, State Forestry and Agriculture Departments and APHIS for invasive species strategy.

Noel Schneeberger: point of contact for:

- Forest Health Protection Program.
- Budget for FHP and for Federal and Cooperative Prevention and Suppression.
- FHP grants oversight.
- Slow-the-Spread Program for Gypsy Moth.
- Asian longhorned beetle coordination.
- Forest pest risk mapping for the Area.

Vacant – to be determined: point of contact for:

- Noxious weeds information.
- Pesticide and Herbicide Coordination for NA and Region 9.
- T&E species impacts from invasive species.
- Facilitate the use of National Forest Risk Assessments for use on private forest management.

Mike Connor, Bernie Raimo, and Dan Twardus:

- Coordinate all exotic invasive control and management actions with cooperators within the states of their responsibility.
- Periodically share current invasive information among Forest Service offices within NA and with our key cooperators.

B. North Central Research Station:

Bob Haack, Bill Mattson, and Leah Bauer:

- Lead scientists for exotic forest insect research.

Jenny Juzwik and Mike Ostry:

- Lead scientists for exotic forest disease research.

C. Within the Northeastern Research Station, the project leaders for the four core insect and disease units share responsibility for various aspects of EIS Research and Development. Below are listed their specific areas of interest.

Kathleen Shields, Project Leader of NE-4501:

- ALB coordination
- HWA coordination
- GM and other defoliator biology and biocontrol
- Quarantine facility coordination

Michael McManus, Project Leader of NE-4502:

- Microbial pesticide coordination
- GM slow-the-spread coordination
- GM and other defoliators biocontrol

Kurt Gottschalk, Project Leader of NE-4557:

- GM slow-the-spread coordination
- Invasive plant coordination
- Spatial analysis and landscape scale analysis of NIS
- Silviculture and forest management

Jim Slavicek, Project Leader of NE-4509:

- Dutch elm disease coordination
- Molecular markers for NIS
- GM virus strain development

Objective: *Clarify the Forest Service support role in the northeast and midwest.*

A. APHIS does have and will continue to have the primary responsibility in the prevention of entry, eradication, and control of exotic invasive species. We will assist as requested to help control new invasive species from becoming established in the United States.

B. The FHP role in the northeast and midwest will be to support APHIS with emphasis on species impacting forest ecosystems. Within the USFS, the responsibility for noxious weed management is with the Range Management staff group. Our involvement in weeds will be on those that directly impact forests or reestablishment of forests. We may consider wetland weeds that are a part of forest ecosystems.

C. Our primary focus is to reduce damage caused by established exotic pests through direct intervention, forest management strategies, or through research into chemical or biological controls. If new species become established, it may be appropriate for new memorandums to be developed with APHIS. The WO will be responsible for pursuing any new MOUs.

D. A major role will be to act as a source of current information and analysis of information on exotic invasive species, to collect current research, population, and impact information, make that information available to the public in easily understood formats. We will also conduct analyses of the

Objective: *Determine our approach to participating in the management of invasive forest weeds of the eastern forest ecosystems*

A. Identify the authorities that provide for our involvement in forest weed management and identify in what ways.

B. Evaluate a partnership with the NFS in addressing our forest health issues while providing them technical assistance in detection, evaluation, and control of noxious forest weeds.

C. As appropriate, implement programs and/or projects to deal with the highest priority weed problems.

GOAL **Support activities that contribute to preventing new introductions.**

Objective: *Continue to participate in the conduct of pest risk assessments in cooperation with APHIS.*

Continue to participate in the conduct of pest risk assessments such as the ones completed for Chile, Mexico, New Zealand, and Russia, and the one currently being completed in South America.

Objective: *Continue to provide international technical assistance where appropriate.*

A. Providing technical assistance to Russia to further the management of the Asian gypsy moth and to decrease the probability of introduction into the U.S.

B. Providing technical assistance to Brazil in the management of *Sirex* to decrease the probability of accidental introduction of this pest into the U.S.

C. FHP is providing Mexico assistance in diagnosing an oak decline and developing management strategies for coping with the problem.